

Kollmorgen Automation Suite

Release Notes



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Valid for KAS Software Revision 3.01

Valid for AKD firmware version: 01-18-00-004

Part Number: 959720



For safe and proper use, follow these instructions. Keep them for future reference.

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2 Introduction

Welcome to KAS v3.01! This release contains new features and many improvements. This document is intended to help existing users understand the differences between this and KAS v3.0. If you are new to KAS, we recommend that you start off with other documents, such as the Installation Guide.

This document has five sections:

- ["Installation" \(p. 5\)](#) — this section covers system requirements as well as provides firmware, software, and hardware information.
- ["What's New" \(p. 9\)](#) — an overview of new features.
- ["What's Changed"](#) — this section discusses how this release may affect some of your older projects. It let's you know what to do when upgrading, especially if there is anything you need to be careful about.
- ["What's Fixed in KAS v3.01"](#) — a list of issues addressed in this release.
- ["Known Issues" \(p. 13\)](#) — this section contains issues we are aware of, and methods for avoiding or working around them.

TIP




We recommend that you visit the [Kollmorgen Developer Network \("KDN"\)](https://kdn.kollmorgen.com). KDN is an online resource which includes a knowledge base, provides access to downloads, and has a user community where you can get answers from peers and Kollmorgen employees, and make feature suggestions for KAS. Additionally, beta versions of the help are posted and are searchable. Stop by <https://kdn.kollmorgen.com>, take a look around, and don't forget to register.

NOTE

This PDF contains links to the KAS help system, and as such works best when read from within the KAS IDE installation directory. Please be advised that the links to content will not work if the PDF is located somewhere other than `(install directory)\Kollmorgen\Kollmorgen Automation Suite 3.01.x.x\Help\`.

3 Installation

3.1 System Requirements

Element	Description
Operating System	Microsoft® Windows® 7 SP1 (32 or 64-bit), Microsoft® Windows® 10 (32 or 64-bit). For optimal performance, please be sure your operating system is fully updated with the latest patches.
Processor type	Intel® Pentium® M or equivalent processor at 1.5 GHz or greater.
Memory	1 GB RAM (for 32-bit) or 2 GB RAM (for 64-bit) or greater (which is recommended for complex applications)
Storage	16 GB (for 32-bit) or 20 GB (for 64-bit) of free space on hard disk
Display	WXGA+ (1440 x 900) or higher-resolution monitor with 24-bit color. See Note #1 below.
Connectivity	1 Ethernet port, at either 100Mbps/s or 1Gbits/s. See Note #2 below.
Web Browser	A modern web browser is required to access the web server and online help. We recommend Internet Explorer (IE9 or later, see Note #3)  , Mozilla FireFox  , or Google Chrome  .

NOTE

1. Better results are achieved with OpenGL and 3D cards.
2. A 100Mb network is required in order to allow the IDE to Runtime communication to work in all conditions. The AKDWorkBench AutoTuner and Scope both require 100Mb of bandwidth to function properly.
3. IE9 should be considered a minimum. Later versions of the browser are more compliant with web standards and afford better performance and compatibility.

TIP

See the topic [Connect Remotely](#) for information about the ports used by the KAS IDE which may need to be opened to support connecting from an external network.

3.2 Firmware & Software Requirements

KAS is comprised of several software components integrated together to provide a complete motion system. We recommend the following component software versions for best performance and compatibility.

3.2.1 Computer Software

Software Images	Recommended Version
KAS IDE	3.01.0

3.2.2 Firmware Requirements

Controller Firmware to use with KAS version 3.01

Description	Type	Name
800 MHz PCMM	KAS Runtime	KAS Runtime Firmware for AKD-PCMM (KAS-PCMM-M-MCEC)
800 MHz AKD PDMM	KAS Runtime	KAS Runtime Firmware for AKD-PDMM (KAS-PDMM-M-MCEC)
1.2 GHz PCMM	KAS Runtime	KAS Runtime Firmware for AKD-PCMM (KAS-PCMM-M-M1EC)
1.2 GHz Dual-Core PCMM	KAS Runtime	KAS Runtime Firmware for AKD-PCMM (KAS-PCMM-M-M2EC)
1.2 GHz AKD PDMM	KAS Runtime	KAS Runtime Firmware for AKD-PDMM (KAS-PDMM-M-M1EC)

Supported drives include: AKD-M (AKD PDMM Drive), AKD-P (Motion Tasking Drive or Position Indexer), AKD-C, and AKD-N. The recommended firmware version is dependent upon your drive's model and revision. The operational image recommended with this release is 01-18-00-004. Controller firmware is available on [KDN](#).

Drive Firmware to use with version 3.01

Description	Type	Name
AKD Firmware for KAS	Operational	AKD-Firmware-for-KAS-V01-18-00-004
	Resident	R_00-00-63-000.i00
Firmware for drive built into AKD PDMM	800 MHz AKD PDMM	AKD PDMM Servo Drive Firmware AKD-M-MCEC-01-18-00-004.i00
	1.2 GHz AKD PDMM	AKD PDMM Servo Drive Firmware AKD-M-M1EC-01-18-00-004.i00
AKD Drive Firmware	AKD-N	AKD-N-xxEC-01-18-00-004.i00
	AKD-P	AKD-P-NBxC-01-18-00-004.i00
AKD2G Drive Firmware	AKD2G-SPE	AKD2G-SPE-A-02-00-00-000.i00

AKD and AKD2G firmware is available on [KDN](#).

TIP

Please be aware that you may get a F106 error after upgrading your AKD firmware. This indicates that non-volatile parameters are not compatible between the two firmware versions. Resetting the drive to the default memory values using Parameter Load will fix this error.

TIP


FBUS . PARAM05 bit 5 should be set to 0, which is the default value. This will prevent an error E33 and EtherCAT not starting.

If it is not set to the default, the rotary switch of the drive is used to set the EtherCAT Station Alias. This can conflict with the address that KAS is writing.

3.2.2.1 Mandatory Resident Firmware

The recommended resident firmware is v63 (R_00-00-63-000). The recommended resident firmware for AKD-C and AKD-N is v63 (R_00-00-63-000). To reliably support the EtherCAT Firmware Download, the resident firmware must be at least version 35. Please [contact Kollmorgen](#) for any AKD Drive with resident firmware lower than v35.

3.2.3 Kollmorgen Visualization Builder

Software Images	Recommended Version	Download
Kollmorgen Visualization Builder (KVB)	2.40	

The new installation package contains both the IDE and runtime for TxC panels. The KVB ZIP file contains two different installers:

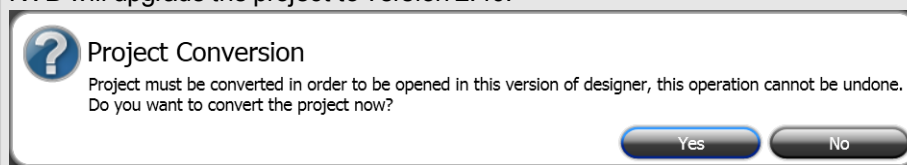
Install Type	File	Notes
New installation	setup.exe	This is the complete package which will install all prerequisite components.
Runtime	RuntimeSetup.exe	This package contains runtime software for TxC panels.

Supported by KVB 2.20

Hardware / Software	Versions
Operating Systems	Windows® 7, Windows 8, Windows 10
Controllers	PCMM, AKD PDMM
HMI	All Kollmorgen AKI panels

NOTE

The KAS IDE creates projects using KVB 2.0. When you open a version 2.0 project by double-clicking on it, KVB will upgrade the project to version 2.40.



⚠ IMPORTANT

KVB 1.2 projects are not compatible with KVB 2.x. An attempt to open a v1.2 project with v2.x will result in an alert message. If accessing v1.2 projects is important, we recommend keeping both versions installed on your system. New panels will automatically use KVB 2.0.

👉 TIP

If you have a KVB 1.2 project that needs to be updated in KVB 2.x, please contact Kollmorgen.

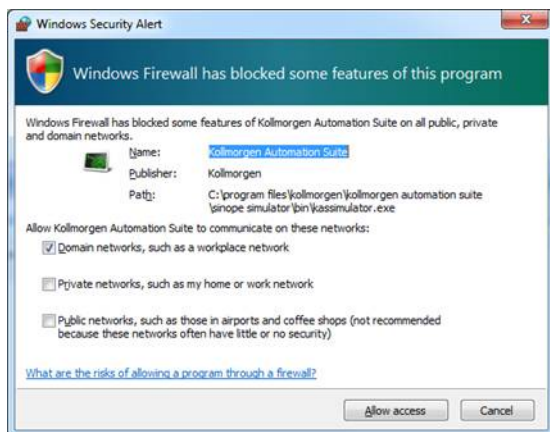
3.3 KAS Controls

KAS Runtime is compatible with, and has been verified with the following hardware models:

Description	Model Number	Main Characteristics
PCMM, 800 MHz single core	AKC-PCM-MC-080-00N-00-000	Standard Mutli-axis Controller
PCMM, 1.2 GHz single core	AKC-PCM-M1-120-00N-00-000	High Performance Multi-Axis Controller
PCMM, 1.2 GHz dual core	AKC-PCM-M2-120-00N-00-000	High Performance Multi-Axis Controller
AKD PDMM, 800 MHz	AKD-M0xxx-MCEC-0000	Standard Drive Resident Controller
AKD PDMM, 1.2 GHz	AKD-M0xxx-M1EC-0000	High Performance Drive Resident Controller

3.4 Allow Simulator to Use HTTP Communication

The Simulator needs to open HTTP ports to allow communication. The first time Simulator is run, Windows will prompt you to block or unblock the KAS application. You should allow access to all of these requests to ensure correct behavior.



The Simulator uses port 80 for the web server. This communication channel is mandatory for Simulator to work properly. So please close any application, such as VOIP, that may use port 80 before starting Simulator.

For more information see [Start KAS Simulator](#).

4 What's New

KAS v3.01 introduces the following new features.

- PCMM dual-core with PipeNetwork Motion Engine
- Multiple KAS IDE installation versions on the same computer. See the [Basic FAQs](#) for more information on working with more than one installed version.

KAS version	Only 1 version	Multiple Installed Versions
< v3.00	✓	✗
v3.01 and later	✗	✓

- KAS Simulator integration with the KAS IDE, see [Start KAS Simulator](#).
- KVB v2.40
- PxMM Controller [Controller Backup Import / Export](#): The web-server supports the Import/Export for the controller backup.
- AutoSave for Recovery Files: see [AutoSave Recovery File Settings](#) in the Tools -> User Options menu
- Project Build Number in User Program - see [GetCtrlInfo](#)
- Persistent FFLD and ST editor sizes
- 800MHz vs. 1.2GHz vs. 1.2GHz Dual-Core: The KAS help has a new section to provide guidelines when selecting a controller model. For details please see [Controller Performance](#).

4.1 AKD2G Support

This release of KAS supports the new AKD2G drives. This release supports both single and dual-axis models. Models with SMM are also supported but have the same features as non-SMM models. The WorkBench with AKD2G support has been integrated into the KAS IDE. This release also supports firmware download by the KAS IDE, digital and analog I/O are supported by the KAS IDE and runtime.

TIP

If you are using AKD2G drives, please consider contacting us to get the latest (beta) KAS IDE software package and drive firmware to have the latest AKD2G features.

Present limitations include:

- SMM-model specific support is not available. Safety modules and Safety PDOs are not configurable
- AKD2G Capture engine is not available
- Extra position feedback units (#2-5) are not available
- Backup/Restore is not supported

IMPORTANT

If you are upgrading an application from v2.12 (or older) and switching from AKD to AKD2G drives, or from a single-core PCMM to a dual-core PCMM, you need to update the sub-programs from UDFBs. The sub-programs need to be recreated to support the new devices.

4.2 v1.18 AKD Firmware

- The AKD Firmware v1-16 (and higher) supports a new drive parameter, ECAT.LEGACYREV, to enable a backwards compatibility RevisionNo (0x2). By default, AKD-Series drives will ship with the latest production release firmware, with ECAT.LEGACYREV = 1, for backwards compatibility.
- The AKD Firmware version 1-16 (and higher) supports a 3rd FMMU if the ECAT.LEGACYREV = 0. The advantage of using a 3rd FMMU is 30% performance improvement with the KAS IDE embedded Workbench communication.
- EtherCAT RevisionNo: EtherCAT provides an optional field to identify a vendor specific RevisionNo for a device and a field to specify the logic to CheckRevisionNo for device compatibility. The KAS IDE and Runtime supports multiple RevisionNos for the same Vendor/ProductID. In previous KAS versions, the EtherCAT initialization would generate a device mismatch error, if the device's RevisionNo and the project's RevisionNo did not match. If the device's ESI file does not specify the CheckRevisionNo logic, then by default the KAS Runtime will allow any RevisionNo at EtherCAT initialization. Also, the IDE will allow you to map physical devices to project devices with different RevisionNos and keep the project device configurations.
- Limitation: The CheckRevisionNo options "equal or greater than" (EQ_OR_G, LW_EQ_HW_EQ_OR_G, and HW_EQ_LW_EQ_OR_G) are not supported. They will be evaluated as "equal" (EQ).

5 What's Changed in KAS v3.01

- Several UDFBs were updated.
 - [FB_PWDutyOutput](#): The **DutyOutput** argument is set to zero when the function block is not enabled by the first input.
 - [MLFB_HomeMoveUntilPosErrExceeded](#): The function block was updated to use [MLAxisReadFEUU](#) for more accurate calculations.
 - [MLFB_HomeMoveUntilPosErrExceededThenZeroAngle](#): The function block was updated to use [MLAxisReadFEUU](#) for more accurate calculations.
- Motion engine response to drive hardware limits. See [Overtravel Conditions](#) for more information.
- SoftScope - Mapping/Unmapping variable made easier by right-clicking on channel
- GetCtrlPerf with PCMM Dual-Core: In previous versions, the CpuldlePct value ranges were 0-100% for single-core controllers and 0-200% for dual-core models. The dual-core CpuldlePct value ranges have been changed to 0-100%. For more details, please see: Technical References > System Library > GetCtrlPerf
- [MLAxisDriveNumber](#) reads the Drive Axis Number associated with the PipeNetwork axis for multi-axis AKD2G models.
- Launch Simulator from the IDE: The Simulator toolbar button now enables Simulation mode, launches and connects to the Simulator. When the Simulator toolbar button is disabled, the IDE is disconnected from the Simulator, the Simulator is closed, and the Simulation mode is disabled. The Windows Start menu item for the Simulator is no longer available and is not needed. For more details see [Start KAS Simulator](#).
- PLCopen Digitizing Axis: The PLCopen Digitizing Axis has been changed to support S300/S700 drives. If the Digitizing Axis' EtherCAT address is not an AKD family drive, then the feedback position value will not be bit shifted. There is no change to the Digitizing Axis operation with AKD family drives.

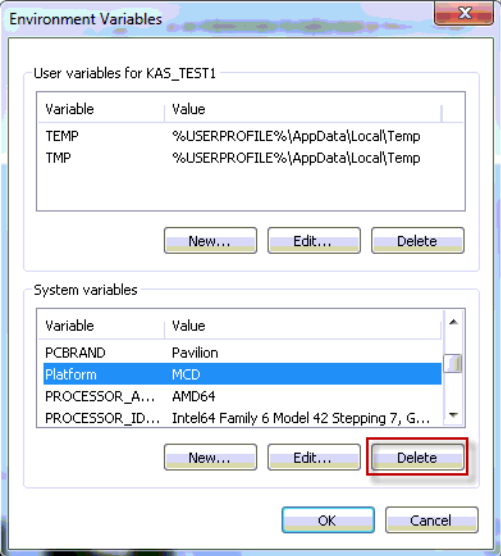
6 What's Fixed in KAS v3.01

Items fixed by KAS v3.01

Defect	Description
BZ-8639	KAS IDE cannot open projects with non-ASCII characters in file name or path.
BZ-9807	PLCopen axis setup allows too large of a number to be entered
BZ-9833	Non-ASCII project names on a controller or Simulator are not displayed correctly in the IDE
BZ-9853	MLCNVConECAT fails with first-time added configurable PDO object
BZ-9857	IDE Crashes when triggering inside workbench view scope and running PLC application
BZ-9865	Cannot force variable in FBD editor
BZ-9872	Rollover not working on spinning wheels for Simulator and WebServer
BZ-9917	Negative position on digitizing axis is not returned correctly through MC_TouchProbe
BZ-9920	MLMstAbs/MLAxisAbs can't be aborted by second MLMstAbs/MLAxisAbs
BZ-9925	Velocity jump with MLMstAbs / MLAxisAbs. If during the acceleration portion of the first move, a second move was commanded, then the resultant profile could have two possible bad behaviors: <ul style="list-style-type: none"> • Velocity could decrease instantly, then decelerate to the 2nd target position. • Continue to accelerate past the target velocity, then decelerate to the 2nd target position.
BZ-9971	Derivative function's output is erratic
BZ-10038	Cannot move connection between blocks in PipeNetwork editor
BZ-10046	Jump in middle of cam profile with PLCopen
BZ-10064	PLCopen velocity move to zero does not fully stop

7 Known Issues

Defect	Description
BZ-10072	Conversion from LREAL to PLCopen fixed point numbers loses precision
BZ-9975	KAS IDE crashes in the Workbench Performance Servo Tuner Window
BZ-9928	ESI file list is not updated when good and bad ESI files are added at the same time
BZ-9848	KAS IDE broken if Windows user name contains non-ascii characters
BZ-9835	Non-ASCII characters in projects not handled properly in the KAS IDE
BZ-9834	Import/export from/to non-ascii file names does not work correctly
BZ-9832	Cannot add libraries (.KAL files) with non-ASCII file names
BZ-9496	AKD-N firmware download fails if 4x drives are selected
BZ-8608	KAS IDE views do not scale if Windows text scaling is > 100%
DT-3442	PDO objects not defined in the object dictionary (or 24bit size) will not work properly with MLSmpXxxxx(...) functions
DT-3439	KAS IDE hangs if AKD variable added to watch window before opening AKD-GUI. To work-around, open the AKD-GUI (Configuration tab) first.
DT-3431	PLCopen move blending with jerk. If the blending move is commanded with an unreachable velocity, the move may abruptly decelerate to the final position within one sample, exceeding the specified deceleration rate.
DT-3427	E21 when KAS IDE running O-Scope is disconnected
DT-3419	Adding ESI File After Scanning Results in No Selected PDOs
DT-3418	PLCopen S-Curve move may not reach target with small Jerk
DT-3417	EtherCAT scan fails after a AKD drive firmware download failure with a wrong EtherCAT topology
DT-3410	Recovered projects don't recover imported libraries (.kal files)
DT-3408	When a crash report fails due to error (ex - timeout, connection failure, ...) report is lost. User cannot resend.
DT-3382	MLInitTrig does not configure the AKD Capture engine correctly for a negative edge trigger.
DT-3367	ECAT network restore fails to recover from drive FW download failure.
DT-3290	PDOs need padding to meet byte boundary requirement. The IDE PDO Editor does not automatically pad PDOs on non-byte boundaries. The problem can be avoided by manually adding dummy objects to pad the PDO size to line-up on byte boundaries. For more details, see the article on KDN (kdn.kollmorgen.com/content/how-do-i-insert-pdo-padding-kas-pdo-editor).
DT-3287	KL3314 Operation. Temperature values are not calibrated properly to the thermocouple. To work-around the problem, use ECATWriteData to setup the control word (16xE0) and send value (16x2006) to Register R32 and a second ECATWriteData to write zero (0) to the control word to set up the continual output of the temperature.
DT-3265	Modbus renumber address does not work with String variables. In the Fieldbus Editor Modbus configurator, if you right click input registers and choose the renumber address option, it will make the addresses overlap.
DT-3041	Missed cycles while doing file operations
DT-3013	Modified cam file is not downloaded when forcing an Online Change.
DT-2940	WebBrowser component not working for TxB panels
DT-2935	K-Bus slices analog inputs Offset parameter does not work
DT-2798	IDE disconnects from the controller after several days(
DT-2590	Breakpoint with For(...) loop, increases VM load significantly

Defect	Description
DT-2560	IDE animation with non-matching project versions
DT-2523	<p>On windows 7 Home Premium Edition on HP computers, there is a known issue when using the simulation.</p> <p>To work around this issue, we have to delete the Platform system variable:</p> 
DT-1134	IDE always reports the project has been modified

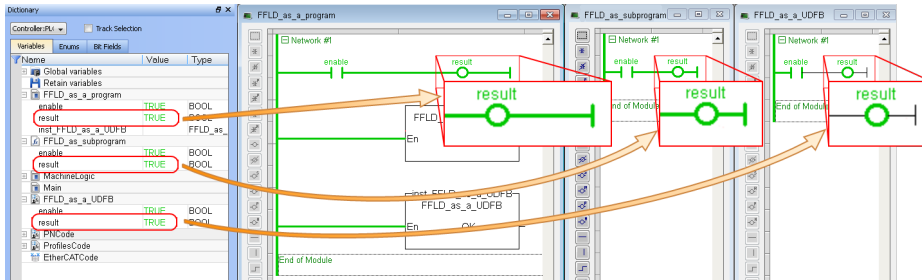
8 Known Limitations

- The undo action is not possible for all operations.
- Find/Search/Replace function: Search & Replace function is not supported in Pipe Network. Search and replace for HMI are supported only with local CTRL+F
- In SFC programs, breakpoints can only be set on transitions (i.e. in First Level diagram), and not in steps or conditions. With a breakpoint set on transition, you can debug cycle by cycle.
- SFC programs are limited to 64kByte size due to the bytecode engine. If the SFC program exceeds 64kBytes, the compiler will generate a warning message: **Warning: limit is 64KB!**
- Plugging the EtherCAT cable to the OUT port is not detected and is not reported as an error
- PLC Variable mapping: each PLC variable can be mapped to an EtherCAT IO and exclusively to:
 - Modbus for an HMI
 - Or to an PDMM Onboard IO
 - Or to an external driver

For example, a PLC variable cannot be mapped to Modbus and Onboard PDMM IO at the same time.

8.1 FFLD Animation Limitation

The animation of FFLDs defined as UDFBs has a limitation where connected rails are not being animated. This is not the case when FFLDs are defined as programs or subprograms.



8.2 EtherCAT Limitations

- **Cabling:** Plugging the EtherCAT cable from an OUT port to an OUT port is not detected and not reported as an error.
- **External EtherCAT Configuration:** If an external EtherCAT XML file needs to be used, the file `AKD-for-KAS.xml` should be used as the ESI file for AKD. This ensures proper operation with KAS. It can be found at
`C:\Users\\AppData\Local\Kollmorgen\KAS\Astrolabe\ESI\.`

9 Third Party EtherCAT Device Support

This section summarizes the known capabilities and limitations with KASsupport for 3rd party EtherCAT devices:

9.1 Requirements

- All 3rd party devices must have an ESI file containing the device information, features, and settings.
- MDP devices must support automatic module discovery at EtherCAT network scan.

9.2 Limitations

- KAS may not discover MDP fieldbus gateway devices that require MDP gateway profiles, implemented to the ETG 5001.3 specification. This includes gateway protocols: CAN, CANopen, DeviceNet, Interbus, and IO Link.
- PDO upload is not supported.
- Manual slot configuration is not supported with MDP devices.

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North America KOLLMORGEN

201 West Rock Road
Radford, VA 24141, USA

Web: www.kollmorgen.com
Mail: support@kollmorgen.com
Tel.: +1 - 540 - 633 - 3545
Fax: +1 - 540 - 639 - 4162

Europa

KOLLMORGEN Europe GmbH

Pempelfurtstr. 1
40880 Ratingen, Germany

Web: www.kollmorgen.com
Mail: technik@kollmorgen.com
Tel.: +49 - 2102 - 9394 - 0
Fax: +49 - 2102 - 9394 - 3155

South America KOLLMORGEN

Avenida João Paulo Ablas, 2970
Jardim da Glória, Cotia – SP
CEP 06711-250, Brazil

Web: www.kollmorgen.com
Mail: contato@kollmorgen.com
Tel.: +55 11 4615-6300

China and SEA KOLLMORGEN

Floor 4, Building 9, No. 518,
North Fuquan Road, Changning District,
Shanghai 200335, China

Web: www.kollmorgen.cn
Mail: sales.china@kollmorgen.com
Tel.: +86 - 400 661 2802